EXECUTIVE SUMMARY

During the period from 1995-2001, the South Florida Water Management District (SFWMD) and the City of West Palm Beach led a cooperative effort to develop the Northern Palm Beach County Comprehensive Water Management Plan (NPBCCWMP). The purpose of this effort was to develop a collective vision that would meet present and future water resource needs for the area.

A consensus-based process was used to develop this plan and evaluate alternative solutions that helped achieve this vision. Stakeholder participation on policy and technical advisory committees included representatives from public water supply utilities, water control districts, agricultural interests, environmental groups, and state and federal resource management agencies. The Policy Advisory Committee (PAC) identified planning assumptions and future conditions in the area. The Technical Advisory Committee (TAC) identified potential solutions and constraints. Both groups identified performance criteria that could be used to determine success.

Palm Beach County is expected to experience significant growth between now and 2020, primarily in the coastal areas. In the Northern Palm Beach County Planning Area, public water supply demands are projected to increase by 63 percent, from 82.2 million gallons per day (mgd) in 1995 to 128.6 mgd in 2020. No additional agricultural development is predicted to occur -- in fact, some existing agricultural lands may be displaced by future urban development. This planning area contains significant environmental resources that need to be maintained or enhanced, including the City of West Palm Beach's Grassy Waters Preserve, Palm Beach County's Loxahatchee Slough and the state of Florida's Northwest Fork of the Loxahatchee River. In addition, providing water for this basin in the future may potentially affect other nearby regional resources, including Lake Okeechobee, J.W. Corbett Wildlife Management Area, and the northern Everglades within the Water Conservation Area (WCA). Conclusions from the baseline runs of present and future conditions were that the current infrastructure was not adequate to meet future water management requirements.

To meet the projected future urban, agricultural and environmental demands, and protect water quality and environmental values, this plan identifies needs for the following infrastructure improvements:

- 48,000 acre-feet of storage in regional reservoirs
- 50 mgd of water storage in regional aquifer storage and recovery (ASR) facilities
- 12,000 acre-feet or more of additional storage in wetlands and local reservoirs
- 10 mgd or more obtained from reclaimed water

Additional structural features are needed to improve the ability to convey surface water among storage areas, control water levels in the Loxahatchee Slough and provide flow to the Northwest Fork of the Loxahatchee River.

The general goals of this effort were defined early in the process by the PAC -- to provide adequate water supplies to meet present and future, human and environmental needs, to protect water quality, to provide flood protection for urban and agricultural lands, and to protect and enhance important environmental resources. With assistance from the TAC, more specific objectives and the following concepts were developed to achieve these goals:

- **Capture surface water in the C-51 and L-8 basins that would otherwise be lost to tide.** Storage areas will be designed and operated to provide local flood protection, regional water supply and water quality benefits.
- **Link storage areas by improving existing canal systems and using newly constructed pumps and water control structures.** The backbone of the conveyance system would be the City of West Palm Beach's existing M-Canal, expanded to convey water to the City's surface water supply reservoir - the Grassy Waters Preserve.
- **Reconnect historical flows from Grassy Waters Preserve north into the C-18 Basin and the Loxahatchee Slough.** The Loxahatchee Slough, most of which has been acquired by Palm Beach County, is a wetland system that is in need of hydrologic restoration.
- **Augment baseflows to the Northwest Fork of the Loxahatchee River.** Improved flows are primarily achieved by providing additional storage capacity in, and water deliveries from, the Loxahatchee Slough.
- **Augment groundwater recharge for municipal wellfields in northern Palm Beach County.** Existing and proposed groundwater withdrawals in the C-18 Basin have been limited by virtue of wetland impacts in the Loxahatchee Slough. These impacts may be reduced or eliminated by construction of improved water delivery facilities and operational capabilities in the watershed.

The development and use of computer simulation models was critical to the success of the planning process. Specific water management features were combined to create water supply alternatives that were designed into the models. The models were run, based on historic climate conditions from 1985 to 1992, to produce simulated results. Each proposed alternative was carefully evaluated by agency staff and the advisory committees, using previously agreed-upon performance measures. The end product of this process was a recommended plan to increase the storage and conveyance of surface water within and between the respective basins, improve water quality, protect and enhance environmental resources and provide additional water for urban and agricultural use. These goals were achieved through a combination of improvements, including construction of new facilities, better management of existing water resources, and development of alternative water supply sources.

Preliminary results of the NPBCCWMP effort were provided as input during development of the Lower East Coast Regional Water Supply Plan (LECRWSP) by the

SFWMD. The modeling efforts undertaken by the SFWMD for the LECRWSP, as well as that undertaken in conjunction with the federal Comprehensive Everglades Restoration Plan (CERP), include conceptual elements in the northern Palm Beach County area. Additional planning and evaluation studies will be conducted in the future as LECRWSP and CERP projects move from conceptual to detailed design phases. These studies will provide a means to leverage state and federal support to better achieve the local and regional goals stated in this plan.

The federal effort to restore the Everglades through the CERP will, in the long-term, provide most of the infrastructure needed to make this NPBCCWMP plan succeed. The CERP projects will be implemented in two parts. Part I includes hydroperiod restoration in Pal-Mar and the Corbett Area, the C-51, C-17, and L-8 basins; and Lake Worth Lagoon restoration. These components will be implemented beginning in 2001 and be largely completed by 2010 at an estimated total cost of $235 million. Part II includes construction of ASR facilities, and is scheduled to occur from 2009 to 2020. The estimated cost of Part II is $ 188 million. The cost of these projects will be shared with the federal government. The federal process provides an opportunity to refine proposed projects and resolve issues to produce more effective solutions. To the extent that a consensus exists among local stakeholders and the United States Army Corps of Engineers (USACE), implementation of selected projects could be expedited to move forward during the next five years.

This action plan has been developed to address specific water resource issues in advance of CERP schedules in a manner that will be consistent with, facilitate, and expedite completion of CERP components. The projected schedule, funding, and local participation actions needed to implement and support the water resource development components of this plan through Fiscal Year (FY) 2005 are summarized in **Table ES-1**.

Table ES-1. The Projected Schedule, Funding, and Local Participation Actions Needed To Implement and Support the Water Resource Development Components of the Northern Palm Beach County Comprehensive Water Management Plan through Fiscal Year (FY) 2005.

Project	Estimated Costs ($ Millions)				Finish Date	Long-Term Project Benefit	Partners (b)
	Total	Local (a)	Through FY 02	FY 03 to FY 05			
L-8 Pilot Water Storage	$.44 (c)	$.44	$.44	N/A (d)	2001	3,500 acre-feet of storage	PBC, WPB, ITID, SFWMD
L-8 Reservoir Testing	$3.1	$2.1	$2.1	TBD		demonstrate reser-voir feasibility	PBC, SFWMD, USACE
C-2 Pump Station	$4	$2	$0.5 (e)	$3.5	2005	400 cubic feet per second (cfs) conveyance	WPB, ITID, SFWMD
M-Canal Widening	$3	$1.6	$0.7	$1.4	2005	450 cfs conveyance	WPB, SFWMD, ITID
ASR Wellfield Pilot well const. Siting study	$2.2 (f) $.07	$1.1 $.07	$0.4	$1.8	2004	1-5 mgd (pilot) up to 50 mgd	WPB, SFWMD
City of WPB Wetlands-Based Water Reclamation Project Phase 1 and 2	21.4	12.6	8.8	N/A	2003	15 mgd	SFWMD, WPB, USEPA
Flowway Improvement 3-72” Culverts G-161 Structure	.1 1.2	.1 1.2	.1 .1	N/A 1.035	2002 2005	50 cfs (interim) 150 cfs conveyance	PBC, WPB, SFWMD
Lox Slough Structure (G-160)	$2.5	N/A	$1	(g)	2006	5,000 ac-ft storage	PBC, SFWMD, Private
Total	$38.01	$21.21	$14.20	$7.735			

Notes: (a) Local costs are assumed to be the non-federal funded portions of total costs, including combined SFWMD, local and other government contributions; (b) PBC = Palm Beach County, WPB = City of West Palm Beach, ITID = Indian Trails Improvement District, ECR = East Coast Regional Water Utility, Jupiter = Town of Jupiter Water Utility, ENCON = Loxahatchee River Environmental Control District, USEPA = United States Environmental Protection Agency, USACE = United States Army Corps of Engineers; (c) Pilot project through preliminary engineering design only; (d) dependent on final engineering design; (e) Through design and permitting phases only; (f) Feasibility and siting (1)-5 mgd pilot well only; (g) Construction administration.

Additional projects are underway, within and outside the planning area, that may affect and enhance the ability to achieve the goals and objectives of this plan. Work on, and results from, these efforts need to be considered and incorporated as this plan is implemented. These ancillary efforts include the following:

Kitching Creek Study
C-17 Basin Study
Cypress Creek/Pal-Mar Watershed Study
L-8 General Reevaluation Report
West C-51 Project
Indirect Aquifer Recharge Study
Regional Reuse of Reclaimed Water

Preliminary results from the effort to develop minimum flow and level (MFL) criteria for the Northwest Fork of the Loxahatchee River were also considered during this analysis. Initial assumptions, based on information that was available at the onset of the planning process, were used as a basis to identify quantities of water and flow conditions that would protect the river's ecological resources from significant harm. The final versions of MFLs and restoration targets may recommend different flow conditions from those used in this plan. Once revised criteria have been developed, the MFL document will also include recovery and prevention strategies and identify any additional operational or structural features that may be needed to meet those criteria.

Other planning studies and projects are underway that have been initiated since this study was conducted, that will need to consider the conclusions and recommendations of this NPBCCWMP as input to their processes. Examples include the Palm Beach County Sector Plan; Hungryland Slough, Riverbend Park, and various other restoration projects; the Loxahatchee Slough Master Plan; and the Kitching Creek Comprehensive Basin Study that are underway by the City of West Palm Beach; Palm Beach, Martin and St. Lucie counties; Jonathan Dickinson State Park; and SFWMD.

The NPBCCWMP is contained in two volumes. Volume I details the schedules, costs, and funding of proposed projects for the next two to five years. Volume I also includes a list related water management projects and agencies involved in cooperative efforts that support or supplement this plan. Volume II is a technical report summarizing the planning, modeling and analyses that led to the recommended structural improvements.

This plan is designed to effectively address immediate problems, in a manner that is consistent with LECRWSP and CERP directions, to the extent that local, regional, and state support will allow. Proposed implementation schedules and cost estimates are provided and potential funding sources and project participants are identified. These recommended actions are not all inclusive, nor are they intended to limit the range of alternatives available to local governments or improvement districts in the management of water resources. Other local efforts and options for developing and managing water resources of northern Palm Beach County are underway and need to be supported as this plan is implemented. This plan also identifies areas of existing or potential conflict and unresolved resource management issues, which became apparent during the modeling studies and subsequent analyses. These concerns will be addressed in the next update of the LECRWSP, based on additional information and results of studies identified in this plan.